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The Merck Manual – Second Home Edition

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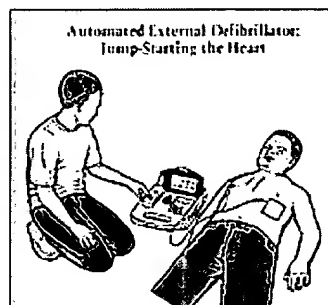
Cardiac Arrest

Cardiac arrest is what happens when a person dies; the heart does not beat and breathing ceases, which starves the body of oxygen. Sometimes a person can be revived during the first several minutes after suffering cardiac arrest. However, the more time that passes, the less likely it is that the person can be revived and, if revived, the more likely it is that he will have brain damage.

A person in cardiac arrest lies motionless without breathing and does not respond to questions or to stimulation, such as shaking. A rescuer who encounters someone who fits this description first determines whether the person is conscious by loudly asking, "Are you OK?" If there is no response, the rescuer turns the person on his back and uses the "look, listen, and feel" approach to determine whether breathing has stopped: looking to see whether the chest moves up and down, listening for sounds of breathing, and feeling for air movement over the person's mouth. If the person is not breathing, the rescuer checks for airway blockage by looking into the mouth and throat for any visible objects.

First-Aid Treatment

First aid for cardiac arrest should proceed as quickly as possible. If an automated external defibrillator (a device that can start the heart beating again) is available, it should be used immediately. The next step is to call for professional medical assistance. Next, if the person has not resumed breathing, cardiopulmonary resuscitation (CPR) should be started. CPR combines artificial respiration, which supplies oxygen to the lungs, with chest compression, which circulate oxygen to the brain and other vital organs by forcing blood out of the heart.



See the figure [Automated External Defibrillator: Jump-Starting the Heart](#).

Skill in CPR is best obtained through a training course. The American Heart Association, American Red Cross, and many local fire departments and hospitals offer CPR training courses. Because procedures may change over time, it is important to stay up to date on training and to repeat courses as recommended.

To begin CPR, the rescuer lays the person on his back, rolling the head, body, and limbs at the same time. The rescuer then removes any object visibly blocking the airway. Next, the rescuer tilts the person's head back slightly and lifts the chin, which sometimes opens a blocked airway. If breathing does not resume, the rescuer covers the person's mouth with his own and begins artificial respiration (mouth-to-mouth resuscitation, rescue breathing) by slowly exhaling air into the person's lungs. To prevent air from escaping from the person's nose, the rescuer pinches the nose shut as he is exhaling into the mouth.

Artificial respiration is very similar in children and adults. However, with an infant, the rescuer places his mouth over the infant's mouth and nose. To prevent damaging the infant's smaller lungs, the rescuer exhales with less force than with adults.

Failure of the chest to rise after artificial respiration indicates that the person's airway is blocked. If the chest rises, the rescuer gives two deep, slow breaths.

Next, chest compressions are performed. The rescuer kneels to one side and, with arms held straight, leans over the person and places both hands, one on top of the other, on the lower part of the breastbone. The rescuer compresses the chest to a depth of 1½ to 2 inches in an adult, less deeply in a child. For an infant, the rescuer uses two fingers to compress the infant's breastbone just below the nipples to a depth of ½ to 1 inch. CPR can be performed by one person (who alternately performs artificial respiration and chest compressions) or by two people (one to perform artificial respiration and one to perform chest compressions). Breaths are given about 15 to 20 times per minute (once every 3 or 4 seconds), and chest compressions are performed about 80 to 100 times per minute. The rescuer continues CPR until medical assistance arrives, he is too tired to continue, or the person recovers.